

THE CHART-MAKERS.

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I.

H.M.S. *Dart* was a schooner yacht of 400 tons, which had been bought from a private owner for the Naval Service, and had afterwards been lengthened and fitted with auxiliary steam power. She was a good little ship, and in spite of the alterations to her shape and draught caused by the addition of engines, boiler, and screw-shaft, was still a first-rate sailer. She was intended to be the "Admiral's yacht" for the Australian station; but, by some dark official process, she became instead a Surveying Vessel, and thereafter fulfilled a long and honourable career in those waters in the service of the Chart-makers. She was entirely unfitted for hydrographic work; but we are accustomed, in the Surveying Service, to be dealt out with old castaway ships, or "misfits," and to make the best of them. The *Dart* was by no means the worst we have had in recent years; in fact, she was rather above the average. We were quite pleased with her. The crew forward on the mess deck numbered sixty; there were six of us in the Ward-room—three lieutenants of the Hydrographic Branch, and three "Idlers," as the Old Navy, with bludgeon-

like humour, designated the Engineer, Surgeon, and Paymaster.

Besides, and over all of us, there was the Captain—the "Skipper," the "Old Man,"—a lieutenant like ourselves, but a few years older, having "2½ stripes"; such, in fact, as nowadays is styled "Lieutenant-Commander." He was separated from our profane society in the Ward-room by a passage-way of at least three feet in length, at the end of which was the door of "The Cabin." Here, in splendid isolation, in accordance with the Law of the Navy, he resided; and if occasionally he heard from the end of the passage a few home-truths, they were probably welcomed by him as a corrective to the chorus of approval, and even of affection, which more often assailed his blushing ears; for he was the best of fellows, and we didn't mind if he knew it (as well as our opinion of his mistakes).

We commissioned in Auckland, New Zealand, and then set forth on what proved to be a devastating voyage to Sydney, New South Wales. In ordinary weather the trip would have taken us a week, but this time it took four, each

one of which was signalled by a fresh and furious gale. It was mid-winter—the merry month of June. We rounded the North Cape of New Zealand one anxious night in the teeth of a howling north-wester; only just able, with the sheets hauled flat aft, and with the faithful engines going at full speed, to claw the struggling, sagging ship off from the immense black cliffs close under her lee. The full realisation of the seriousness of things was veiled for me, and for most of our new ship's company, both officers and men, by the anodyne of sea-sickness, which laid us flat in a state almost of coma, all unaccustomed, as we were, to the cantrips of so small a ship in so great a seaway. Our watches had to be kept through it all—wet, drooping, unheeding, as we might be, of all save personal misery. When, during my next turn on deck, the slow morning broke through the rain, we were past the headland, with the sheets eased. The danger of the lee shore was past, though not that of the grey waves, roaring hungrily at us. But the little ship was staunch, dancing over them, dipping and curtseying to them with a fine disdain. One monster, however, took her unawares on the starboard side, and as she lifted to it, hurled its foaming crest on the deck, carrying all away to leeward, sweeping, in a wash of icy water, coils of rope and the men standing by them, against the berth-

ing, where, fortunately, they were brought up. Then, heeling the ship heavily to port as it passed under her, the great hill of water seized the lifeboat, where it hung on the lee side swung out ready for an emergency, but tightly secured to its davits, and tore the boat bodily away. With dim uninterested eyes of sickness, I watched it floating away, uninjured, swept along on the crests of the great combers.

We heard later that it was washed up at Tom Bowling's Bay, in the North Island, where, still uninjured, some Maoris found it on the beach. This first gale had hardly cleared off before, two days later, another began in an orgy of electric display. St Elmo's Fires appeared at each mast-head and yard-arm—the *Dart* was square-rigged on the fore,—and on both peaks of the gaffs. It was in the gale which followed, coming from the eastward, that we were "pooped"—partly through the nerveless steering of an unfortunate sea-sick helmsman—as we ran before the wind. A tremendous sea rolled in on us over the starboard quarter, deep and green, and poured down the companionway, which, with its booby-hatch covering, faced aft towards the oncoming flood. In doing so, it carried with it the first group it encountered—namely, the helmsman, the Quartermaster conning the ship, and the Officer of the Watch. The first of them shot down the ladderway to the bottom

in a bruised and battered heap, the other two managed somehow to cling to the upper deck. In the Ward-room, which was at the foot of the companion, the swirling sea discovered, and tore away from its securings, a can of lamp oil, which it broached, carrying its contents away with it, and floating them broadcast. The wave spread itself, and the oil with it, into each cabin and passage-way below the deck, so that every surface reached by it became like a sheet of ice, and the difficulty and even danger of getting about the ship, already great in the tumbling seaway, was horribly increased. Boots and bare feet carried the oil from the lower deck to every tread of the stairway, and unless the most extreme precaution was observed, you shot down it, like the traditional "greased lightning"—greased, indeed,—and went up it clinging desperately to the hand-rail, hand over hand, for foothold there was none.

During that terrible passage we encountered two more gales, each with its own list of losses (a second boat went away from us in one of them); but we arrived at length off Port Jackson, battered and storm-worn, with every sail but two blown out of the bolt-ropes. We steamed slowly through the Heads, and up to Sydney, on almost our last few ounces of coal. It was a lovely day (at last), and the harbour was full of pleasure boats. As we proceeded to our moorings in

Farm Cove, we were greeted with cheers and flag-wavings, not only from the boats, but from crowds of people gathered on the ends of the pleasant wooded points that diversify the shores of that which the proud inhabitants invariably speak of as "Our beautiful 'arbour." One boat came alongside of us, and we hailed her to inquire what was "on." "Why," said the people in her, "you have been reported in all the papers for the last fortnight as 'lost,' and here you are! Hooray!" We were frankly amazed. That we had had a thoroughly horrid, and even dangerous time, we were aware, but this result of our long unpleasant voyage we had never expected. It was quite an embarrassing resurrection. Our arrival off the Australian coast had been reported, we heard, from a lighthouse to the northward, where we had made the land the day before; and hence this popular reception. The news was telegraphed to the Admiralty at once, and reached London shortly before eight o'clock on Sunday morning, June 30. In spite of the day of the week, in spite of the hour of the morning, the message was sent out at once by special command to sixty-seven homes in the United Kingdom, where, after a fortnight, during which the hoped-for news came not, anxiety was settling down into despair, and even into the wearing of "mourning." It arrived soon after eight o'clock at my home in Ireland. The

Postmaster, an ex-naval petty officer, and the greatly admired adviser and friend of my naval cadet days, did not wait to write out the happy news on the pink form, but rushed to the house by the shortest route, which was over the kitchen-garden wall. "Ma'am, ma'am," he called out breathlessly to my mother at her window, "the *Dart* is safely in Sydney! Glory be to God!" Such omission of post-office formality, not only in the matter of the unwritten message, but in the pious extension of its wording, could, I feel sure, only have occurred in Ireland; and if the costume in which my sisters at the top of the back-stairs met the Postmaster was, as I have heard, distinctly informal, this also was Irish, and did not, at that supreme moment, excite attention.

A month and more went by before we were comfortably re-established in the *Dart* as a going concern, with sails replaced, and new ropes rove; with the empty davits, whence the boats had been torn away by the seas, re-supplied; with leaks stopped; with sea-sodden furniture and beds, oil-soaked carpets, and ruined kits renewed. Then, at last, we steamed northward into that wonderful region, the "Inner Route," off the coast of Queensland, where, in latitude 15° S., our work was laid.

The Great Barrier Reef of Australia is a coral breakwater that reaches southward for a

thousand miles from Papua, protecting the Queensland coast and baffling the Pacific swell at a distance of thirty miles from the land. The space between the Barrier and the shore is a festering intricacy of reefs, shoals, and islets; it has taken the coral-disease very badly. As you leave the Barrier and approach the land, the scattered patches lessen both in size and number, until you come at last to a belt of fairly clear water between the last of the reefs and the coast, which is in most places three or four miles wide, though sometimes much less. This belt of navigable water, which lies roughly parallel with the trend of the coast, is known as "The Inner Route." Through it ships provided with charts may travel in comparative safety and in smooth water from Capricorn Channel, where, in the latitude of the Southern Tropic, the Reef begins, all the way northward to Thursday Island (known, for the best of reasons, as "Thirsty Island"), which lies on the tenth parallel, off Cape York, the burning tip of Australia.

The chart we were ordered to make was to replace one made in the year 1841, which had itself replaced the original chart of the explorations of Captain Cook; and it chanced that the twenty-mile stretch of water and reefs between the coast and the Barrier on which we were to start was filled with special memories of that great man. Sailing northward in

the *Endeavour* in June 1770, he got caught in the then unknown widespread net of coral, and struck heavily on a reef off Cape Tribulation (as, very suitably, he named it). With difficulty the ship was released from those cruel fangs; and, with a lacerated and leaking hull, Cook sailed her slowly farther up the coast for forty miles, desperately searching for a spot where she might be beached and repaired. At last he reached the mouth of what is now known as Endeavour River; and there he stayed for seven weeks, with his ship grounded on the soft mud, while he mended her and cured his crew of scurvy. With so hard-sounding and unromantic a name as that of the great navigator, it is not possible to do much in the way of local commemoration, and "Cooktown," afterwards built at this historic spot (now a busy and important port of Northern Queensland), represents probably the summit of human endeavour in that direction.

In August, Cook set forth again to extricate himself from the tangle of reefs and shoals that filled the unknown space between the land and the open ocean beyond the Barrier. By assiduous use of the sounding lead, and, above all, by a keen look-out at the masthead, he succeeded in traversing in safety the very waters of which we were now to make a new, and final, chart. On that troublesome journey he anchored sev-

eral times, landing at Point Look-out, at Lizard Island, and at Eagle Island, to view from these standpoints the best gangways among the reefs—all of which places became stations for our theodolites. Then keeping, as he tells us, the two high and rocky Direction Islands in a line, he sailed north up a stretch of clear water, until at last, five miles away on his beam, an opening appeared in the great sea-wall—a blue ship-passage between the white spouts and jets of foam to the northward and to the southward; and, hauling to the wind, Cook took the *Endeavour* out through it, and away eastward into the open sea.

One of the first things to be done on starting a hydrographic survey is to choose and mark suitable points on the adjoining land from which may be stretched the invisible net of triangulation that is to enclose the field—the sea-field—of work, and bind together in correct relation its principal features. These starting points are usually established on island-tops and cliff-tops, if possible in sight of one another. The points chosen must be clearly discernible through a theodolite telescope, sometimes from fifteen or even twenty miles distance; so that it is necessary to build on these summits great cairns of stones, or, if no stones are to be had, to set up large wooden tripods, surmounted by bamboo flag-

staffs thirty feet high, with bright-coloured flags. If the beacon is seen from seaward with a dark background, it must then be whitewashed. These marks are not intended merely for vision as between theodolites, though that is their first intention. When the triangulation has been calculated, the positions of the marks plotted on paper, and the work of sounding the depths of the sea between them has begun, they are essential for fixing the ship's position by sextant angles as she moves about from sounding to sounding. The marks must therefore be such as can easily be picked up in the small field of a sextant-telescope, and quickly too, while the ship swoops and curtsies on the swell, and the skipper is calling aloud on you to "Come on, and hurry up with that angle." As you value your eyesight, as well as the good opinion of the Chief of the Survey, so will you build your marks large and conspicuous and white. "Whitewash is the Surveyor's Friend," say truly all the textbooks. In addition to these fundamental beacons on the cliff-crests and elsewhere, we surveyors have an unpleasant but necessary habit of painting large patches of whitewash at distances of half a mile or less along the whole of the low part of the shores surrounding our field of work. These marks are intended chiefly for fixing the positions of soundings taken by the surveying boats. While the mother ship is sounding in

the deep offing, her water-chicks will generally be seen, spread out over the adjacent sea surface, running lines of soundings between the shore and the deep, or navigable, water where the ship's lines begin. The boats' share in chart-making is usually more important than that of the ship, especially in the case of harbour surveys, and this is the justification for these white leprous blemishes on the landscape. While they remain, the most perfect primeval landscape is vulgarised by them; but the kindly rains and seas gradually wash them away, and in the course of a few months outraged Nature will have resumed her reign, and the desecrated coast will have been purged of these impertinent footprints of the march of Science.

To establish these marks, then, we four—the Skipper and his three subordinates—were distributed over the field of survey. Each of us had his allotted sphere, and it was arranged that each should land in his respective domain on the same afternoon, camp there for the night, and thus be on the spot to start work early on the following morning. My share was Point Look-out, with the bays on each side of it; and with this task I began my experiences as a hydrographic surveyor.

Neither I nor any of my boat's crew of five men had ever camped before (this was long before the invention of Boy Scouts), and I still remem-

ber the excitement and importance of the occasion as the boat, lying alongside the gangway ladder, was loaded with provisions and water, with blankets and cooking-pots, and lanterns.

Above all do I remember the overwhelming ecstasy of exchanging an orthodox cabin-bunk, from which, with outstretched arm, I could touch the beams supporting the deck above me, for the unbounded bedroom of that mysterious untrodden shore, with the warm sand beneath, and millions of miles between me and the upper deck of stars. I have camped since then, I am thankful to remember, in many lands, for many a happy month, but the romance and the delight of it have never for me lost their freshness.

The beaching of the boat was, of itself, an adventure. It was a gently shelving shore, on which a moderate surf was breaking in steep-fronted waves. No matter how clever you may be with oars, anchor, and cable, it takes but a very little surf to slew a boat broadside-on to the beach; and then, as likely as not, the next wave will capsize her, and land her in disaster. Seamanship books give all sorts of directions on the subject, and at first I followed the much-dinned-in injunctions of theorists; but it did not take long to discover their futility. I realised almost at once what is the only sure thing to do when once you are in the shallows. The secret is

not to manipulate the boat from inside her, where such leverage as oars and rudder afford is devoid of a fixed fulcrum, but for all hands to jump overboard and to man-handle her from outside. In this way, with solid ground under our feet, we six were easily able to keep the ponderous laden boat with head on to the waves, allowing each of them, as it passed, to help us by bearing her farther and farther up the beach, until she was at last in safety. Of course, in this proceeding all of us got wet to the waist, and above it; but in that warm water and dry hot air this was hardly as much as a discomfort. When you have been surveying in tropical seas for a few months, it never occurs to you to think whether feet and legs are operating in air or in water. All that it is necessary to consider is the possession of strong boots. Horrible sores are the inevitable result of getting feet wounded by the poisonous coral, and it does not take long to establish the fallacy of the popular belief that salt water is good for cuts.

The spot at which we landed was the sand-choked mouth of a lagoon that lay, dark and dank, just behind the sea-beach. Only a few yards divided the two waters; but it was like the narrow barrier that divides Life from Death. Outside, the sparkling sea, tumbling in white and living foam on coral sand of almost as excellent a whiteness; in-

side, the gloomy mud-bordered depths, unmoving, save where a noisome bubble ascended slowly here and there, and quietly loosened at the surface its horrid gas. The lagoon's edges were grown over with tall deep-green mangrove-trees, whose red hooping roots crawled through all the shallows. There were high mangrove clumps as well on every detached mud-bank, so that the whole lagoon was divided up into dim and narrow alleys of shaded water—paths to the hidden homes of crocodiles, of banded water-snakes, and of detestable crabs, disposers of the dead. A huge crocodile's skull lay whitening near the water's edge. It was at once annexed by one of the boat's crew for a "curio," and as we gazed at it in some wonder, for we had not expected to meet with such monsters on an Australian sea-beach, there came out at us from the lagoon a starving trumpeting band of grey-striped mosquitoes. In order to keep these tigers of the air at bay, we broke off branches of the mangrove-trees, only to find ourselves in the jaws of a yet more ferocious foe. Every stick and every leaf was the hidden lair of myriads of large green ants, who fell instantly upon us, storming furiously down the necks of our shirts, clinging to the undefended bodies within with bull-dog grip, and emitting their fiery poison. Flinging away our branches, we fled the scene, stripping madly from

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us as we ran the ant-infested garments, until at last we gained the top of a little hill which overlooked the edge of the coast. A gentle wind was stirring, sufficient to blow away the mosquitoes, and very soothing to the hot much-bitten skin as we sat there, half-naked, and exterminated the remainder of the green army, now unable to call up its reserves. It was so pleasant at this spot that I decided to make here our camp for the night. Returning cautiously to the beach, we dragged the boat up to well above high-water mark, and brought back with us to our place of refuge such "gear" as would make us a shelter for the night. Two oars, lashed in the form of an X, went at one end of our bedroom; two more, similarly crossed, were planted in the ground at the other. The boat's mast was laid on the top as a ridge-pole, and the lug-sail was stretched over it, slanting to the ground at both sides, to be roof and side walls all in one. It was already quite dark before we had finished cutting, from a handy grove of fragrant gum-trees, as much wood as we thought would be sufficient for the fire; and then, as soon as supper was cooked and eaten, one very tired officer and five very tired bluejackets laid themselves down for the night. In the matter of camping, ignorance certainly does not lead to bliss; but the awakening to knowledge comes soon—indeed, you can scarcely call it

awakening when there has been no sleep. In less than an hour I had discovered firstly, that for a camping-place you need flat ground, since the slightest slope dispels restfulness; secondly, that the amount of wood which five men can collect in an hour will burn up in less than that time; thirdly—but there was no end to the branches of knowledge that grew with dire rapidity on the Tree of New Experience. The wind died away, the smoke-smudge from our fire did the same, and the mosquitoes came down on us like strong men armed, singing songs of triumph as they stabbed and drank deep. Not until about four o'clock in the morning did slappings and cursings cease around me, and the weary began to find rest.

An hour later—and it seemed but the winking of an eyelid—I opened my eyes quietly but definitely, possessed by the uncomfortable feeling that Somebody was there. There had been moonlight all night, but its liquid radiance was now pouring away out of the sky behind the hills to the north-westward, as the growing splendour of the new day, sweeping up from the sea to the eastward, came into triumphant occupation of its realm. I sat up, and in the mingling lights I saw three Blackfellows standing at my feet, gazing down at me. They were all of them perfectly naked, and each carried in his hand a long wooden spear. One of them gave a little chuckle, and then, looking towards a hillock half a mile inland, softly called into the calm air “Cooo-ey.” Back from the hillock at once came the same cry, clear and soft; and I could see, for I was by now on my feet, a little group of men standing on its crest, just visible in the dawn light. The men were awake by this time; and I daresay none of us was free from a somewhat chilly feeling of dismay on realising the ambush in which we had awakened to find ourselves. The situation was one against the possibilities of which I had not been warned. The native savages were said to be “practically extinct,” and, in any case, it could have occurred to no one to expect to find human beings among these crocodile-haunted lagoons, on the desolate border of the sea. It was true that Captain Cook had seen a naked footprint in this identical sand of Point Look-out where now we were camped; but that was 120 years ago, and the fact did not seem to be a sufficient reason for keeping any watch beyond that which the mosquitoes had compelled from us. I had never seen Blackfellows before, but I knew they were reckoned as “dangerous,” such as remained of them—as well they might be, seeing the many and terrible old scores they had against the white invaders. The rest of the gang had come up by this time, ten or twelve in number. They were about two to our one; each of them had

a weapon, and we were unarmed. But, as it fell out, they were quite friendly. One of them could even speak a few words of English. "Goo' day, boss," he said very amiably; "gib it bacca." After so sensational an opening, one now recognises a touch of bathos in this dénouement. But, at the time, this did not occur to us. Far otherwise. We thankfully distributed among our visitors such ship's biscuit and "bacca" as we could spare; and these offerings were accepted by them with, it is possible, some feeling of gratitude. There was, however, no more outward demonstration of it than is made by monkeys at the Zoo for similar benefactions. There was just the same simian wary-eyed acceptance, and the same long, hairy, outstretched arms. No risks were to be taken. The sun came up out of the sea, and the little herd of Blackfellows disappeared into the bush, spears in hand, for the day's hunting. It fills with strange feelings the civilised heir of all the Western ages when first he sees grossly naked shock-headed Man sliding, untrammelled, between the trees of his native forest. A snapshot of ancient Memory is suddenly exposed on the sensitised plate of the mind; and one sees oneself in a flash, as dark, slim, and swift, with heavy-browed eyes, full of malice and watchfulness, prowling for food by day, nesting anywhere in the woods by night

among the torn-down branches of trees. . . .

By this time the "billy" had been induced to boil, and breakfast took place amid the ruins of last night's camp, now hated, but once the admiration of its constructors. When you are ashore in Australia you do as Australia does, and make tea in an ordinary can, a plain tin cylinder, such as encoffins bully beef, but furnished with a practicable lid and a wire handle. This is named a "billy." When you are on board a British man-of-war, the same simple vessel is called a "fanny." The superstition exists that tea made in a "billy" (or "fanny," which you will) is the best to be had—a superstition having its basis probably in the fact that you can actually see that the water is boiling before the addition of the tea leaves. What the origin of the name "billy" may be, I know not; but "fanny" has a gruesome etymology. Years ago, in the 1870's, at just about the time when "tinned mutton" first came into the Navy, to alternate once a week with the then beloved (but horrible) "salt horse" and salt pork of our even more salted sea-ancestors, it happened that a certain Frances Adams was murdered. Her remains were cut up and distributed variously by her murderer; and the legend ran that a portion had been found in Deptford Victualling Yard. When, as soon happened, this legend became "a fact," pre-

served mutton was, throughout the Service, known as "Fanny Adams"; and though the appetising origin of the term is now largely forgotten, the tins which were alleged to have sepulchred the poor lady's remains still universally commemorate her Christian name. It is now extended to any similarly shaped can, quite innocent of the Victualling Yard, such as is supplied with the mess-gear of every lower-deck mess.

On Point Look-out we built a splendid cairn of the large stones which lay in profusion all around. It is a pleasant headland, 300 feet high above the sea, grassy and clean, with patches of sand, as Captain Cook remarked, "of [an exquisite fineness."

Cairn-building is not an easy task for sailor hands to do, but it is quite interesting. A mere heap of stones will not suffice. It must be scientifically constructed, circular, with dry-walling exterior, firmly bonded; and the whole structure must have a slight "batter," sloping inwards, like the foot of a lighthouse. Finally, the work is crowned with a tall flagstaff, carrying a large calico flag, brilliant in red and white, and the cairn itself is whitewashed. Later on one regards from seaward a satisfactory mark with the happy pride of the successful artist. "Look at my cairn on Look-out," you proclaim, "twinkling away like a little star."

Few things are so agreeable as watching other people at work. Through a glass I could make out the far-flung groups of my brother-builders about the field of survey, and mark their progress, as the flicker of white came from each new stopping-place, like lamp-lighters along a street. The view was fine, and the breeze cooling in the restful shade of our own noble construction, where we sat with our backs supported by its handsome curve. We drew several breaths, and they were long ones, before descending to the boat, and the hot shoreline, to continue our labours there.

The pale-blue floor of the coral-enclosed sea was spread in a semi-circle before us, sprinkled with reefs and islands, like the pattern on a carpet. Below us, three or four miles away, were two large ugly patches, brown surfaced, cream-edged with surf. Beyond lay another reef, a narrow crescent, along the crest of which ran a gleaming strip of coral sand, terminating in a tiny islet, on which stood a solitary tree. This was Eagle Island, so named by Cook in 1770 in consequence of finding upon it an enormous nest containing young sea-eagles. When we landed there later on it was interesting to find still an enormous eagle's nest, still occupied, evidently the home of a county family.

Beyond Eagle Island in our outlook came the *pièce de resistance* of the whole table

of our survey: our base of operations, and our home from home—Lizard Island,—flanked and backed by a patterning of reefs and islets innumerable, reaching beyond it to the Barrier itself. Lizard Island is a ridge of granite three miles long and over a thousand feet high. It was seventeen miles away, so it was with the eye of faith only that I could see our agile skipper sweating his way up to the summit on a cairn-building expedition; but the vision was sufficiently vivid to inspire thankfulness on that baking day that this expedition was his share of the proceedings, and not mine. Along the mainland, to the southward from our point of observation, ten miles of sandy shore separated us from Cape Flattery: a great buttress 900 feet high, with rough ridges and crags reaching down on three sides of it into the warm sea, white and busy at its feet; and on the fourth side, landward, sinking into a soft smother of low and shifting sandhills, with gleams of blue lagoon waters between them. Beyond these, and nearly in the same line, was Cape Bedford, another buttress not unlike Cape Flattery, and of the same height. It was beyond the limits of our survey; but the wide sandy bay on its southern side, where the coast takes a sweep inwards to the mouth of the Endeavour River, was the scene of my second adventure with Australian natives. The account of it may therefore fall into

history here, though actually it took place a few months later than that just recounted.

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The often boisterous south-east trade wind had finished for the year, and had died away; the weather was fine, and the ship and her boats were consequently making the best of the smooth interval for sounding. Then came to the Skipper the Engineer officer, to say that a sudden important need had arisen in the engine-room for certain small stores which had been sent for, and were, we knew, waiting for the ship at Cooktown. Cooktown was fifty miles from our base at Lizard Island; and to have taken the ship there to get the stores would have meant the loss of two precious days from our work, to say nothing of the waste of coal for the double journey. If the fact that a certain best girl lived at Cooktown lay at the root of the "urgency" of our susceptible man of machines, as we others in the ward-room secretly suspected, he was (to put it vulgarly) "sold a pup." The Skipper decided not to move the ship, but instead to send the steam-cutter on the errand, these important stores being, unfortunately for the best girl, no more than an easy boat-load; and I was sent in charge of the boat, and to navigate her through the reefs. We were to sleep the night at Cooktown, and return on the following day. Food, coal, and water were piled into her,

and we started in the cool calm of a lovely morning, hoping to arrive at Cooktown by about sunset; for the little steam-cutters of those days could not be counted on to keep up more than a 5-knot speed.

"All went well," as the newspapers compendiously describe the dull interval that precedes a really juicy disaster; until, in the early afternoon, we found ourselves off Cape Bedford, afore-mentioned, after a journey of thirty-five miles. Then, with malignant suddenness, there sprung up a fresh breeze, dead in our teeth, soon followed by a choppy head sea. It was quite the wrong time of year for a southerly wind of this or of any nature; but, in defiance of this fact—elementary in every sense—wind and sea steadily grew worse and worse. By five o'clock in the evening we were still off Cape Bedford, still nosing into it heavily, and our speed had dropped to something less than one knot.

There was by now scarcely any coal left for the furnace, and the tank of fresh water for the boiler was nearly exhausted too. All hope of reaching Cooktown that night vanished. Sunset was rushing upon us; and all that remained to be done was to anchor the boat off the coast for the night, and to land the next morning, cut wood for the furnace, fill the water-breakers with fresh water for the boiler, and, thus replenished, to steam the re-

maining ten or twelve miles to Cooktown. The unpleasant part of it was that there was no sheltered water within our reach that was shoal enough for anchorage. On the contrary, the only place to which we could fetch with the few pounds of steam-pressure still remaining in the boiler was off the open sandy beach southward of Cape Bedford, where we should have to anchor off a dead lee shore, completely exposed to both wind and sea. Nothing, in fact, could have been much worse. White curling waves were breaking far out from the shore over the shallows in curved lines of foam; and when the steam at last failed, we anchored as far outside them as possible, paying out every inch of our small chain cable, so as to lessen the possibility of dragging the anchor. Fortunately it held fairly well in the sandy bottom; but it was far from being a good holding ground. We all spent a night of complete wakefulness, caused not only by the discomfort of the cramped boat, but, much more, by grave anxiety.

With the first glint of morning came the need and the resolve for immediate action. The southerly wind, though lessened in force, still continued; and it was evident that through the night the boat had been dragging her anchor slowly, but decidedly, into the shallows, in which, if she should bump on the bottom, and get broadside-on,

she would certainly become a total loss.

It was necessary to swim for about 200 yards through the surf in order to reach the beach—a broad and gentle slope of white sand. Behind it there was a thin wood of gum-trees, which would, I hoped, provide us with fuel, and behind the wood again we could see a lagoon, presumably of fresh water; but investigation was necessary. Leaving the coxswain to look after the boat, I stripped and jumped in—not, in my own mind, exactly regardless of sharks, yet not (I hope) exhibiting trepidation, for I knew that some of the crew would have to follow me presently to cut wood and fetch water. There was no real danger of sharks in shallow breaking water; but any idea of it had to be suppressed ere it arose.

When I was about half-way to the shore, with head down, swimming among the cresting waves, I heard sudden shouts from the boat, borne on the wind above the roaring of the surf. I reached down an exploring foot, and finding ground, stood and faced seaward to see what was the matter, in cold expectation of—I knew not what—possibly a capsized boat. But the boat was there, riding to her anchor, much as I had left her; only all hands were standing up shouting and pointing to the beach. “Look out, sir!” (I heard undisguised alarm in the voices.) “Look out; look ashore!” I turned,

and then indeed I felt a sudden qualm; for there I beheld a strong gang of naked Black-fellows, twenty or thirty of them, rushing down the belt of sand towards me, spears and waddies (which are extremely unpleasant, handy, little clubs) in their hands. There was no retreat: it was a matter of being speared in the water in any attempt of mine to buffet back through the waves to the boat, or of being clubbed on the beach when I landed.

Awful stories had been told us at Cooktown since our first encounter with Queensland aborigines of their malignance, of their treachery, and every one of these yarns came flying into my mind to reinforce my consternation. I determined (I know not why) that a death on the beach would be, on the whole, preferable to a watery one, and, without further hesitation, but with a thumping heart, waded ashore. What was my amazement, not to say my relief, when I reached the land to find my hand grasped and shaken vigorously by each wild-looking savage in turn. Incredible as it seemed, they were friends, and not foes after all. Next, and almost as incredible, there appeared a white man, completely clothed—redundantly clothed, as it appeared to me, who at that moment was as untrousered as the dark remainder of the assemblage.

The situation was then explained. This was a Government Settlement of Aborigines,

gathered here from the surrounding bush into a single encampment, with the idea of weaning them by degrees from nomadic savagery; and, by teaching them some primitive form of agriculture, to induce them to abandon their wild habit of wandering through the bush, hunting for food, and fighting for existence. Several such settlements had recently been started, and the white man living among them was their regularly appointed Instructor. To him I explained the grievous situation of my steam-boat; and the effect was both happy and immediate. He commanded, and a gang of strong-swimming blacks dashed into the surf and presently surrounded the boat. Since I had left her she had got into a perilous condition. The tide had swung her broadside to the wind and sea, and the deep heavy hull was being urged inward by both forces faster and faster. The anchor, now almost useless, was dragging through the ever-looser sand, and the boat was in barely four feet of water, and already inside the first row of breaking waves. The blacks knew perfectly well what to do. Some of them seized the boat's gunwales on both sides, and turned her bows so that she was again heading the surf. Another gang dived down, and, following the line of the cable, somehow between them lifted the anchor—a really astonishing feat, which I should not have believed to be possible

if I had not seen it done; and then, swimming with it, laid it out, dropping it on the bottom far ahead of the boat in deeper water, while the boat-party moved the steam-cutter out to suit the length of the cable, kedging her out bit by bit. There the "wet-bobs" of this admirable band of converts stayed by the boat, keeping her at a safe distance from the rollers, while a second gang, the "dry-bobs," rushed into a mangrove clump behind the beach, and chopped wood in a perfect frenzy of excitement and enthusiasm. Mangrove wood produces in a furnace the fiercest heat of any timber (they seemed to be aware of that fact, and chose mangrove in preference to the more handy gum-wood), and they rafted it off to the boat in large bundles, afterwards bringing ashore with them the boat's breakers (small oval-shaped casks) to fill with fresh water from the lagoon.

Without all this help the steam-cutter must undoubtedly have been lost in the surf, and we unfortunate survivors would indeed have had a poor time of it tramping the trackless and unknown bush to Cooktown. Instead of this disastrous termination we had steam up once more by 11 A.M., and were comfortably under way on our proper element, both boat and crew saved for many future surveys. Our gratitude to our preservers, meagrely expressed in kind, as it only could be, from lack

of material, was received, nevertheless, by them with satisfaction; quite different from the silent wary absorption of gifts that we had met with on our first encounter with Black-fellows at Point Look-out. Possibly a sense of gratitude is one of the first evidences of a dawning civilisation; but, as we steamed away, our departure was signalised by wild howls, wavings, and dancings along the beach abreast of the boat for a long distance. The boat had been piled from end to end with wood: we could not possibly have carried more; but it was wonderful to see how quickly it was gobbled up in a furnace constructed for coal. It proved insufficient to take us even the ten or twelve miles to Cooktown; we had to anchor off the mouth of the river, where the signalmen on Grassy Hill at the entrance

saw us. We semaphored to them, and shortly afterwards a large steam-launch appeared, which towed us satisfactorily, if ignominiously, into safety alongside the town wharf.

The following day, well stocked once more with coal, water, and food, and having taken on board those infernal stores for the engine-room, we set forth again for Lizard Island. Still followed by the unnaturally persisting southerly wind—but this time it was an assisting friend—we reached the *Dart* at her base late in the evening.

After all the unnecessary adventures we had been through on his account, it was some satisfaction to see the blank stricken face of the Engineer Officer on his discovering that I had brought back no letter for him.

II.

The establishing of triangulation stations, the marking of the coast with cairns, flags, and whitewashed marks for sounding having been accomplished, there began for the Skipper and the two older "hands" the pleasant work of measuring a base, and of triangulating, tasks that were combined with the extremely boring one of teaching me ("our youngster") how to do the same. The theodolite, that instrument of terrifying name and appearance, was made to

disclose to the "Makey-learn" the ridiculous simplicity which it camouflages with a bewildering array of milled-headed screws, thrusting themselves forward from every part of its frame; and the "sounding sextant"—slightly different from the usual ship-board instrument—was made to become a familiar friend. I accompanied my instructors on every expedition, thus visiting every island, and every summit in all our field of survey, in the pursuit of angles and

measurements. It was a wonderful and glorious change from any naval life I had ever had before. The work was hard, both physically and mentally; the days were long and hot, but also they were happy. One wore old clothes; there was bathing and sailing and hill-climbing; there was fishing and shooting. Above all, there was camping. Interpenetrating these pleasures was the feeling of solid satisfaction that the work through which they came was to have a practical and lasting result. If you sailed a boat, it was not a mere aimless pleasure; you were going somewhere for a useful purpose. When you climbed a hill, it was to get angles for the triangulation on the top of it. When you camped, it was for the sake of the survey, slowly growing under our hands; if you fished or shot, it was very definitely and practically "for the pot" rather than for "sport." Even bathing had its practical use, for it saved fresh water, and therefore coal (by means of which it was distilled) was spared for steaming about, taking soundings.

Following the actual work of getting the angles came the calculations of the results, with which it should be possible to plot to scale on the great "plotting-sheet" the exact relative positions of the triangulation stations on the hill-tops and elsewhere. "Plotting" is a work of the highest sanctity, only to be undertaken by the

holy hands of the Skipper himself. Around stand the assistants, with held breath, ready instantly to produce, at the word of the Head Plotter, the straight-edge, the beam-compass, the paper-weight, or the immediate calculation of the chord of any required angle. Ready, also, to rejoice when the intersection of three or more lines that should so intersect at a single point is exact, and has stood successfully the test of examination under a strong magnifying glass, so that the position on the chart-to-be of one of the theodolite stations, or "points," has thereby been established.

Ready as well to add sympathetic curses to those of the most religious of Head Plotters (as ours was) when, for some reason such as the stretching of the paper, or the slipping of the straight-edge, things have gone wrong, and the intersection is not exact, but is a vexatious little triangle, known as a "cocked hat," necessitating a complete replotting.

Thus by degrees there appeared on the plotting-sheet a series of tiny needle-pricked marks, circled in crimson, and each named in the same glowing tint, which represented the identical spots of our theodolites on Point Look-out, at Cape Flattery, at Eagle Island, at Lizard Island respectively, as well as of many other places scattered over our chart, now in the embryonic state of its existence. When every theodolite station and whitewashed

mark had thus been plotted, a new stage of outdoor activity began. To each of us, Chief and Assistants, there was allotted a portion of the whole field of survey to be his special kingdom, of which he was to work out the details of coast-line, reef-line, and depths of the sea. We each had to prepare a "field-board"—namely, a drawing-board of handy size, for use in a boat, covered with drawing-paper. To this was transferred, by an exact pricking through from the plotting-sheet, all the red-circled points that appertained to each such kingdom. A hydrographic survey differs from a land survey in this—namely, that it must be plotted in the field as the work proceeds. It cannot be kept in the form of figures in a note-book, to be translated into a map later on. So each day, as the work of that day is plotted on a field-board, it is at once traced through on to a large "collecting tracing," embracing the whole survey, and it is thus possible to see what portions—especially of the watery area—have been completed, and what there is still to do. So, by degrees, the "Great Work" (as it is often described) grows. It is a work great in every sense. A plotting sheet is commonly between five and six feet square. Possibly about a third of this space will represent dry land, but the remainder, "our Heritage, the Sea," will be completely covered with line upon line of small figures, crossed in

some places, and recrossed and interlined where irregularity in the depths has caused suspicion that a shoal or rocky patch exists near-by, which anxious search has confirmed. The eye aches to behold so much arithmetic. Each of these figures represents the position of a "sounding"—that is to say, the depth of the sea at that point at the time of the lowest possible tide level—i.e., the least water ever to be found at that precise position. There are often between twenty and thirty thousand of such depth figures on a completed survey; and this alone may give some idea of the amount of labour that goes to the production of a chart. Besides the depths of the sea, there is the coast-line to be delineated exactly, and the topography of the land behind it; for the mariner, often a stranger facing a strange land, wants, not unreasonably, to know whether to expect to see from his ship a flat shore, or a cliff, mountains or plains, forests or cleared land, uninhabited wilds or the houses of men. All of this field-work now lay before us, and to each was allotted his share. To the Skipper himself, the ship's board, on which the soundings to be taken by the ship were to appear; to each of us, his assistants, a boat's board, on which were to grow reefs, and islands, and lines of soundings out from them into the deeper, safer water, where the ship's work joined on.

The way in which a youngster

usually learns to sound from a boat is first by "being put in the way of it" by practical instruction, supervised by an "old hand," and then by being sent off by himself in charge of a boat, with a week's provisions, to deal with some part of the chart where amateur work and crooked lines of soundings will matter least; there to struggle with the many difficulties and adversities that are bound to beset him, and to overcome them single-handed. Thus it was that I found myself despatched one Monday morning in the steam-cutter, manned by a crew of five men, with an attendant small boat known as a "skiff," to a certain low rocky island, nearly twenty miles from where the ship had her base, there to start work "on my own," and not to return, except under emergency, until the following Saturday night.

My island base was an oblong half a mile long and a quarter of a mile broad. Half of it—the western half—was a hillock 150 feet high, covered with trees and grass; the other half, facing the Pacific, was low and shrubby. The islet stood on the southern horn of a great crescent of brown reef, dry at low water, which swept northward from the islet in a magnificent two-mile curve, embracing a blue bay of shelter from the constant and stiffly blowing south-east trade wind. It was fronted by a beach of fine white coral sand, and altogether it was an ideal spot for boat anchorage and for a camp.

There was another beach on the western side of the islet below the hillock, almost equally well sheltered; and it chanced that on our first arrival this was the point for which we made, being then unaware (so bad was the only existing chart) of the better sheltered bay and sandy landing on the northern side.

The sun was setting rapidly, and we had to hurry ourselves and our things ashore, and set the evening pot to boil at once, while we prepared a bivouac for the night. Remembering our experiences with the mosquitoes at Point Look-out, I climbed up the lee-side of the little hill to its summit, to a point where we could feel the trade wind strongly enough to keep the vile insects at bay and ourselves cool. Here after supper we settled down in our waterproof sheets and blankets, and by nine o'clock were all deep in slumber. Towards the middle of the night the moon set, and through the gradually deepening darkness there came, winging his way over our hill-top, a great bird. He was evidently cutting things a bit fine, and—all unknowingly—passed but a few feet above our prostrate bodies; so low, indeed, he flew that the cleaving of the air by his wings gave forth a rushing sound, with something in it so awful, so near, and so foreboding, that it awoke every one of us with beating hearts. It was as if each one of us had been ridden by the same nightmare; and

we sat up as one man, filled with a strange and grim feeling of coming disaster. Those who have been through a midnight air raid will realise the exact sensation.

The boding sound dwelt heavily with me all the following day—indeed, I have never forgotten it; and old Huxley, the leading stoker of the steam-boat, spoke of it to me later on in the light of the events that followed, and of the general consternation it had caused the boat's crew, at first unacknowledged but then confessed.

The next morning's daylight revealed to us, from the Darien summit of our bivouac, a wonderful scene. In the distance the blue line of the outer ocean; in the middle distance, the foaming Barrier; nearer still, the enclosed scattering of brown reefs and of a myriad tiny islets; while immediately below us was the wide semi-circle of the reef upon which our islet stood, with a calm pale-green anchorage embraced in its arms. I decided at once to take the boats round to that side; and, gathering together the gear hastily landed the evening before, we steamed round, anchored the big boat at a suitable position, and landed anew in the skiff.

We had, of course, brought with us tents for our camp; but, to my surprise, I found, just within the shore fringe of scrubby trees, and concealed by them, a clearing in which stood a collection of ramshackle

and deserted wooden huts, set in the midst of a garden of sweet potatoes, tomatoes, and brinjals, all straggling wild. Among them were a few paw-paw trees, their tops surrounded by an accommodating supply of yellow and green fruit, ripening under a crest of leaves and flowers. Close beside them was a well of moderately good water.

On first sighting these traces of humanity I imagined them to represent the sad legacy of some enterprising person—a pearl-fisher, perhaps—who had attempted to establish himself on this islet, and failed to make good; but presently I picked up a piece of notepaper covered with faded writing, which was lying in the garden, and, having read it, the romantic truth dawned on me. This was a barracoon—a cage for “blackbirds.”

In those days, in spite of the best efforts of the Queensland Government to prevent it, there was still going on what was known as “Blackbirding”—namely, the illicit recruiting of native labour for the Queensland sugar plantations from the Pacific Islands. This was carried on by means of sailing brigs, which, dodging the men-of-war that policed the Solomon Islands, New Hebrides, and other Melanesian islands, collected “labour” by specious promises, and by the more solid bait of tobacco, bush-knives, and calico (which represent the currency of the Islands, and are known com-

pendiously as "Trade"). As soon as the hold of the brig was full, and, if possible, overfull of humanity, male and female, she sailed for the nearest practicable entrance in the Great Barrier Reef, and, having passed through it, deposited her wretched black cargo on such an islet as this one on which we had accidentally dropped. From these depots the "labourers" were got away by dribbles in boats to unwatched parts of the mainland coast twenty miles distant, and thence were taken up to the sugar plantations, for sale to unscrupulous managers who wouldn't ask questions.

As to the return voyage, eastward to their island homes at the conclusion of the "contract," there was seldom much difficulty. Cruelty, disease, and almost above all, home-sickness—a real illness among exiled islanders—had already taken most of them "west" long before any question of an eastward journey could arise.

I may digress for a moment from my tale of this particular island to say that my guess as to its evil character became fairly substantiated a month or so later. Lizard Island, our headquarters, was ten miles northward of this islet of ours; and a few miles to the northward again of Lizard Island was "Cook's Passage," a safe and excellent passage through the Barrier to the open sea.

On many Sundays we had landed on Lizard Island, had climbed all over its fine 1200-

feet granite ridge, had shot over it, and had explored it (as we thought) everywhere, and bathed from every one of its beaches, but never had beheld mankind nor any sign of his occupation. But one night, while the *Dart* lay there at anchor, a large beacon fire blazed up on an ocean-facing point, and on the next night there were two fires. The following morning we saw in the offing a labour brig. There was no mistaking her. She had come in by Cook's Passage, but instead of standing on with full canvas, as she might have done, for our Barracoon Islet, as soon as she sighted the *Dart's* mastheads lying off Lizard Island, she hauled to the wind and stood out again. She had evidently grasped suddenly the full meaning of the warning beacon fires she must have seen the night before, and connected them with the unexpected apparition of a man-of-war in that lonely waste of reefs and dangers, and made to sea again with every stitch of canvas that would stand. We never discovered the habitat of the mysterious watchman on Lizard Island who gave the beacon-fire warning, but he was evidently a permanent resident in some hidden part of it. The island is a large one covered with bush, and we had plenty of other things to occupy us rather than searching for him.

To return again to our islet. Having established ourselves in the least dilapidated part

of the empty barracoon, and landed our stores and coal and water supply for the steam-boat for the week of our sojourn, my self-instruction in the art of boat-sounding began. I arranged that the men of the boat's crew should take it in turn, one by one, to stay behind on the island for the day while the boat was away at work. This was partly for a much-needed rest from the heavy work of incessantly heaving a 14 lb. lead during a day of sounding, and partly to look after the camp in our absence. After breakfast each morning the camp-keeper for the day paddled us off in the skiff to the steam-boat to where she was lying at her anchor in the deeper water off the beach. Having seen us off, he returned, hauled the skiff up on the shore above high-water line, tidied up the camp, and spent a pleasant and highly esteemed "day off." I left with him a gun and cartridges, for it was often possible to shoot something for "the pot." Groups of large black-and-white pigeons, in bands of ten or twelve birds, usually came flying over from the mainland in the afternoons, and paused for a breather on our trees. If they did, it was a last breath for one or more of their number. They were a bit tough, and it was a pity they did not choose a rather earlier hour for their visit each day, so that they might have got themselves a bit more tender through a longer stewing; but, most selfishly, they

did not as a rule consider this point. However, combined with sweet potatoes from our garden, with tomatoes and with green pawpaws in the pot, not to speak of preserved mutton from our own stores, the resulting pot-mess vanished all too soon when laid each evening before the hungry toilers of the deep.

It was the job of the camp-keeper to prepare this repast, and to have it steamingly ready for us when we returned at sundown. It was his further duty, as soon as we were anchored, to come off at once in the skiff, and convey us ashore to where the enamel plates and mugs and white-metal spoons were laid out ready for the meal that eager hearts expect after a long and arduous day's work.

On the last day of my week of sounding, it fell to the turn of Chapman, the coxswain of the boat, to have the day on shore in camp. One's coxswain is generally too valuable a person to spare for a "day off" from sounding work; nor does he really need one physically in the same way as the other men of the crew, as he takes no turn at heaving the lead, but works the tiller only. As steersman, if the job be skilfully and sympathetically attended to, he becomes the officer's right hand and his left eye, while the said officer's left hand and right eye are battling with the tangent screw and the telescope respectively of the sounding sextant. Be-

sides this, the officer has somehow, subconsciously, to be paying attention to the soundings, and to enter them, as they are called by the man at the lead, as well as his angles, in the "field book." And he has to plot his position as he goes along his line of sounding as well. It is busy work. It is the coxswain's job, while all this is going on, to keep the boat on a straight line; and a very important job it is too. You give him two points to keep in line, such as a rock on the beach and some conspicuous tree a little way behind: "points to march on," which, if he keeps the boat truly on them, in spite of the inevitable efforts of wind and tide to take him off them, all is well. On the other hand, if he forgets what his two "transit" points on shore are, or puts his helm the wrong way, or sends his wits wandering, all is unwell—it is, indeed, damnable and nothing less.

Chapman, never very bright, had been more than usually sulky and "fed up" during the first four days of the week. More and more gloomy had he become as the days went by, and more and more exasperating in his carelessness in allowing the boat to get off the given line, so that all the soundings when plotted appeared in crooked rows instead of straight ones, and not evenly spaced as they should be. When Friday came I decided to land him for the

day, and to steer the boat myself. Though it added considerably to my labours, it was a blessed relief to the mind; and I was so busy all day, and so successful with my self-steered lines of soundings, that I thought no more about Chapman, except at intervals to rejoice at his absence.

This day's work at least should show the Skipper that I was beginning to learn how to do boat-sounding, even though the lines of soundings on the other days were "all anyhow" (as indeed they were, though this was hardly my fault).

When at the end of the long, hot, windy day we rounded the point of the reef into the shelter and calm of our island home, we were all surprised to see no signs of life in the camp; nor was the camp-keeper there waiting in the skiff, as ordered, to land the weary and hungry workers. The little steam-whistle was blown long and shrilly to attract Chapman's attention. We shouted; we cat-called; but there was no reply. Then we noticed that the skiff had disappeared. She was not lying hauled up on the beach. She had gone altogether. Just as I had made this painful and mystifying discovery, there was a sudden chorus from the men forward in the boat. "'Ullo, look at ole Chapman! There 'e is, sir, layin' down over there, asleep!" And still more vehement cat-calls went forth,

reinforced by further blasts on the whistle.

By this time the steam-boat had reached the usual anchorage place at about 200 yards from the beach ; but what had happened to the barracoon huts, which ought to have been visible from this point through a certain gap in the bushes that fringed the beach ? Nothing was left of them but their blackened ruins, from which a few wisps of thin blue smoke could be seen ascending into the evening air. On the beach in front of them, lying on top of a sort of table-topped framework of cut boughs, which we had rigged up to be a place of deposit for our gear, clear of sand and wet, there, wrapped in a blanket, was Chapman fast asleep. We could get no stir out of him by shouting, and there was nothing for it but to anchor the steam-boat and to swim ashore. We all jumped in together, for there is safety in numbers if sharks should be about ; and presently we were all standing, dripping, around the couch of the sleeping malefactor. When at last he was aroused he seemed to be more sullen than ever, and quite unable to answer any questions as to the skiff, the fire, or (worst of all) our supper. Then suddenly he burst into tears, crying like a baby, declaring that every hand was against him, and began to babble about two large birds which, he said, had been whooping over him and whispering to him all day ; and didn't we

remember them when they came over the hill the first night we landed ? "There they are ; look," he sobbed, pointing skyward with a look of terror, cowering his head under his other arm. But there was nothing in sight there but the quiet stars, now beginning to fall into their places, bright and early—the brightest earliest—for their night watch. We all looked at one another with uplifted eyebrows. Evidently poor Chapman had gone off his chump.

It was, in truth, a pretty fix to be in, there on that wild reef islet ; but fortunately the poor wretch was only melancholy, and showed no symptoms of violence. Leaving Huxley, the Leading Stoker, to look after him, I set off with the other hands to search for the skiff. By the greatest luck we found her near the extreme point of the bay, just about to drift away quietly from the island on the newly starting ebb-tide, having been lifted by the recent high-water off the beach, where she had been hauled up in the morning. After an agitating swim together, we caught her, and, scrambling in over the stern, paddled back to the blackened site of our once comfortable camp, wet and most miserable. There was nothing to eat ; there was not even tea to drink, for the whole of our remaining provisions had been burnt up in the general conflagration, and so had our blankets, as well as our still

unfolded tents, never before needed, on account of the huts ; and, most serious of all, every box of matches had gone as well, except for a few which Huxley remembered to have put in his trouser-pocket in order to light up the steam-boat's furnace in the morning. The next flash of memory reminded him and us that he had just swum ashore in those self-same trousers. He pulled the soaked and disintegrating box out of his pocket, and sadly placed in a row five drowned little Bryants by the side of five defunct little Mays near the still warm ashes of the ruined camp, in the hope—alas ! vain—that the heat might dry the matches back to usefulness. A day's provisions—"iron rations"—are always kept in every surveying boat for use on such an emergency as this. I sent to get them from the steam-boat, and also to bring ashore the stump of a precious candle in a lantern that was there, together with the boat's "fire-work box." This latter was a soldered-up tin box containing rockets, blue-lights, and other means of making night signals, also for emergency use. The provisions consisted of a small quantity of preserved meat in tins and ship's biscuit. That was all ; but it was better than *nothing*, even though we were reluctantly obliged to leave half of it for the following morning, when we should need it for breakfast, before starting back to the ship, which was at a distance that represented some hours of steaming in our slow little boat, towing the skiff. There remained but one thing more to add to our misfortunes, and it came—namely, the rain. The night, after a starry prelude, had slowly been clouding over. The wind gradually dropped, and at midnight or thereabouts the rain began definitely to drop too. Our clothes had been completely soaked with salt water twice over : once in swimming ashore, and again when rescuing the drifting skiff. Wringing them out had produced not exactly dryness but at least a damp approach to it, not unbearable in that climate, if unpleasant ; and the sleep of the just and of the weary had come to us, even on the thin couches of leaves which alone separated us from the hard ground. But now "cold pig" descended on us from the sky, drop after heavy drop. There was no avoiding them. The rain searched every corner of our wretched bivouac. Even the adjacent trees offered little or no protection, and merely collected the falling water in definite catchment areas overhead, from which to fall in larger drops on our defenceless bodies. Further sleep was impossible. With the first grey of dawn began our attempts to make fire ; for without fire there could be no steam in the steam-boat, and no return to the ship. Everything was by this time quite damp, though kindling wood, paper, and what

remained of the matches had been defended from the pitiless rain so far as was possible. The moment had evidently arrived for putting into practice the advice drummed and drilled into the brain of every midshipman of those days as to how to act when away in an armed boat on active service and desirous of obtaining a light, the homely match-box, for some unknown reason, being entirely prohibited from a boat's equipment. The stereotyped reply, which had helped to pass many a *viva voce* exam. for sub-lieutenant, was, "I should fire a blank charge from a rifle into a piece of slow-match placed near the muzzle." A moderately sheltered spot having been discovered under the dripping bushes, this ingenious method was put to the test.

After three whole hours, having destroyed an entire field-day's supply of blank cartridge without any appreciable result upon the sulky slow-match, and having done things with the fireworks which in happier less desperate circumstances would have reduced all of us to mere cinders, a detonator was at last induced to function on its accompanying blue-light; and from this dangerous, quickly burning torch the precious gift of fire was passed on to our equally precious bit of candle. This latter consisted of about 4 inches of a "pusser's dip," which we had cut into two pieces; so that while one sacred flame

could be kept ashore in the camp, cherished from the malevolent forces of wind and rain, the other half of the dip, as lovingly shielded and cherished in a lantern, could be borne off to the steam-boat by Huxley with which to "light up." And then, but not till then, the rain stopped.

Presently the shrill whistle announced the successful raising of steam. We gathered up whatever portable fragments remained to us of the poor charred camp, ate miserably the remainder of our cold, unbreakfast-like "iron rations," and paddled off to the steam-boat just as the nine o'clock sun devoured the last of the rain-cloud; so that our departure at least was, so far, cheerful. Chapman, who had slept heavily through our night of wretchedness, sat quietly in the boat as we steamed back to the ship, with a countenance of the most extreme melancholy, relapsing into tears with the appearance of any sea-bird near or round the boat. When we got on board, and the tale of our adventure and sufferings had been told, the doctor advised that he should be kept under observation only, but under no restraint; and as the day progressed he seemed to become more and more normal. But that night, at a little after 1 A.M., the Quartermaster on watch heard a heavy splash in the sea under the bows. It was an overpoweringly hot night. There had been a thunderstorm and a torrent of rain.

A steaming heat drove all hands up to sleep on deck.

With the always heart-rending alarm, "Man overboard," the quiet ship was immediately roused into thrilling life. Boats were lowered, lanterns flashed, men with ropes and life-buoys bent over the low bulwarks, peering into the blackness beneath. Some men jumped overboard, regardless of sharks, and were swimming about, searching in every direction. It was poor Chapman who had disappeared so suddenly, as we soon found out when mustering the ship's company "round the capstan," as it was called, a duty which was carried out as soon as possible by flickering candle-light, the men in every sort of queer "rig," most of them in nothing but a "flannel."

Nothing was ever seen of the unfortunate man again. When daylight came, the boats were sent in all directions "dragging" for his body, searching with "water-glasses" the pure

white sandy bottom of the little bay off Lizard Island, where the ship lay at anchor.

All that was there to be seen was clearly visible through the translucent water: the anchor and the curve of the attached cable up to the hawse-pipe, a few scattered lumps of dark coral-crust stone, and at one place over which the ship had once lain were the mortal remains of poor old Tabbs, the ship's cat, who had found her last batch of kittens too much for her, and had died a few days previously, and been consigned, shot, to a watery grave. She, at least, had not been touched by sharks, and, indeed, we never at any time saw sharks at Lizard Island, so that what became of the luckless Chapman was and remains a mystery. The Skipper read the burial service over the place of his escape from the "birds." He was marked as "DD" in the List of the Ship's Company, and there the matter stands.

III.

The wise surveying Skipper, who realises that his assistants are but men and not sounding machines, will arrange that those who do the depth-taking part of the work most efficiently shall not for that reason be employed on it and on nothing else.

At the first sign of staleness—and, better still, earlier—he will put the "sounder"

on to some other job, such as Tidal observations, inland topography, astronomical work, coast-lining—there is a large field of choice in Hydrographical Surveying; indeed, each of these subjects (and there are several more) is itself not merely a "field" but an estate of considerable acreage.

After a few weeks of sounding, therefore, not because I

had become very competent at it—far otherwise—but because it was time for me to begin on a new subject, I was put on to learn “coast-lining.” This means the accurate mapping of the high-water line around the coasts of a survey; the boundary, as you may say, of Britannia’s Realm. It is performed by walking round the high-water line of the shore, following exactly its every turn and twist, small and great, and fixing its position on the chart by means of a sextant, theodolite, and several other instruments, indicating, by appropriate symbols, what part is rock, what gravel, what sand, what mud, and so forth. Even the colour of each must be noted, and the heights of off-lying rocks. It is really artistic work, full of dodges, and extremely interesting. If it is possible, a small pulling boat accompanies you as you proceed round the coast, carrying instruments and lunch, and assisting in fixing outlying rocks, too deep to be reached by wading to them.

The tropical coast-line is strangely different from any to be found in the British Isles. In these cold lands the sea-fronts are for the most part bare of trees, and are wind-swept; but in hot-house latitudes, when heat is associated with a rank fertility of soil, the struggling, jostling tangle of trees comes thrusting out over the beach, each foliage-laden bough straining to be the outermost and the first to

suck in the light and the soft damp air coming in over the sea. At high-water the tidal edge lies far in under these green bowsprits, and coast-lining is impossible beneath them, so that, until the tide falls, one must find that rarity, an open piece of coast, on which to work.

At low water an almost greater difference from the English coast-line is seen. Every islet of the Queensland sea within the Barrier is set about with a girdle of flat reef, accreted even as is tartar round a tooth. The shore-line itself is surrounded by a band of coral sand of a whiteness that, in the blazing sunlight, causes first the eyes and then the whole head to ache distressingly; and you step gratefully from it to the stage below the sand, the undazzling stretch of brown, dead, coral rock. This is sometimes as much as a hundred yards in width, and is nearly flat. It is intersected with crevices and pools, in which, left by the tide, are little darting fish of brilliant colours, and large cowry shells (generally the homes of hermit crabs) and black sea-cucumbers, disgusting to look at, and more disgusting to touch. Not a leaf of seaweed, as we know it, is anywhere to be seen. As you walk out towards the reef-edge, the pools become deeper, and their sides are crusted with clumps of living coral; and then suddenly you find yourself on the verge of a steep slope, falling away into

cool blue depths of fairyland. There can be nothing more beautiful or fanciful in the world. You look down through the pellucid water upon a dream-garden of the most exquisite branching sea-growths, of unimaginable variety of forms, all lovely. They glow with colour in the flooding sunlight, not steadily but in quick living palpitations, in vibrations of mauve, and blue, and carmine, and golden brown, and a thousand soft shades besides, down, down, into the purple mystery at the foot of the steep slope: it is the front of the coral army, marching ever outwards from the land on stepping-stones of its dead self to better things.

Through its wonderful branches, as if their own glowing colour was not sufficient for the greediest spectator, there move fishes of shapes and tints surpassing all invention, ever changing, ever interweaving. In their setting they are like the creatures of some brilliantly illuminated ancient manuscript.

When tramping along the beach, industriously coast-lining, it is difficult indeed to resist taking an occasional and quite unnecessary walk to the reef edge when the tide is low to look over it into the wonder-land slope of the weather side. To do so, however, requires not only strong boots, but also great circumspection. Some of the crevices in the surface of the dead reef are the hidden dwelling-places of giant clams, whose double shells often weigh

as much as a hundredweight: you could easily give a baby a bath in one of them. One must suppose that these monsters began their existence, when no larger than cockles, in some vacancy among the coral branches at what was then the outer edge of the living reef. As the reef grew slowly seaward and *Tridacna gigas*—which is the monster's name—increased in size, he pushed away the softly encroaching coral buds until by the time the living front of the reef had grown outward past his chosen home, he had moulded for himself a recess in the now hard coral rock, just wide enough to allow full play to his hungry jaws, and just deep enough for them to be exactly flush with the surface of the reef. Thus the huge creature lies completely hidden, and as you walk over the reef a careful look-out is most necessary. Each lip of the shell is deeply corrugated and sharply edged. When closed, the indentations fit closely into one another, and when open they lie five or six inches apart. If, as you walk, you look sufficiently closely, you can distinguish the mouths of these man-traps (though they are intended to be fish-traps) by a wavy zigzag line of dark green and red. The corrugations of the lips of the shell are thus traceable amongst the lighter browns and reds and greens of the reef, but are not at all clearly marked. Shortly before our arrival in the Queens-

land waters, H.M.S. *Amethyst* (of those days) was making a cruise through the Inner Route to the northward. Being at anchor one day, leave was given to any of the men who would like to land on an adjacent reef-islet to bathe and collect shells or bits of coral for the back parlour at home. Several took advantage of this opportunity of cheap "curios." The tide was rising, and was already about three feet deep, when one of the men, wading over the reef, not knowing of such a possibility, put his foot into the mouth of one of these giant clams. The heavy jaws, with their strong muscles, immediately closed like a rat-trap on his leg, just above the ankle, and there he was, a prisoner. His chums tugged. They tried to drag open the iron lips. It was of no avail: the clam was too strong for them. The tide rose steadily up and up the unfortunate man's body; it was as horrible as a "Tale of Mystery and Imagination." Some of the men rushed away to signal to the ship for a boat and for help. Assistance came, but it was barely in time, for the tide had already risen to the man's shoulders.

The *Amethyst* was a west country ship—that is to say, from Devonport—so that among her company shell-fish specialists were easily found who would know how to deal with even the largest cockle should it refuse to open its lips. They hurried to the

rescue, bringing a long iron bar, which, being plunged deep into the interior economy of the great clam, and vigorously stirred round, presently extinguished his power for ill, or for anything else. The giant muscles ceased to act, the jaws fell apart, and the man was rescued badly lacerated by the sharp rough edges of the shell, but alive, and saved from the slow and terrible death which must otherwise have been his fate.

The fringe of coral around the land is not invariably continuous. There are in some places wide breaks, indentations that run right up to the sandy shore, either in the form of a bay in the reef or as a narrow gully, and often end in a pleasant cove of fine white coral sand, with, perhaps, a space behind it of short wiry grass before the trees of the background begin. Such spots are, no doubt, arranged by the kind Providence that looks after the dinner-hours of hydrographic surveyors in the field, in order that they may take their pleasure therein during the hottest time of the tropic day. And such a cove I have in mind, which, on a certain day of coast-lining, I had directed my attendant boat, a five-oared whaler, to make for, while I and my assistant-carriers of instruments tramped round the coral-fronted beaches of the island. In the middle of the cove, growing suddenly out of the white sandy bottom,

there was a large clump of brilliantly glowing corals, with their attendant fairy fish. The boat's anchor was cast out close to this clump, so that her stern, when she swung to the wind, floated just clear of the beach. We of the shore tramping party waded out, when dinner-time came, and flung ourselves into the boat. There, under the grateful shade of the awning, all hands fell to enormously on preserved mutton, pickles (lots of pickles; you feel you need them when there are no vegetables, and half a bottle was a man's ordinary ration), ship's biscuit, and coffee—the regulation “surveying lunch.” While this was proceeding, the bowman of the boat, looking over the side into the marvellous sea-garden below, was romantically inspired to collect a nice bit o’ coral for the old woman’s mantelpiece at ’ome (with glass shade and wool-work mat complete). Therewith he hooked up with the boat-hook a few of the best growing branches, depositing them in the bow-locker of the boat. It was against “ship orders” to collect coral; but neither the coxswain nor any of the crew saw what had happened, as all were facing aft at the moment on their thwarts at their meal; and I, though I was facing forward from my seat in the stern and saw all, said nothing, well knowing what the result would be. For coral, exquisite both in shape and colour when alive, growing in

the tepid water, as soon as it reaches the upper air and the burning sun begins instantly to fade; and, thus expiring, the coral “insects” become a foul and glutinous mass of a dirty brown colour, which drips heavily off its supporting branchy skeleton, smelling so evilly that the ship order above mentioned had to be made.

The sun was pouring down, and, penetrating the criss-cross of the grating that covered the bow-locker (which lay outside the spread of the awning), it struck on the coral concealed beneath. The coral was already in an advanced stage of dissolution, and the additional heat considerably strengthened the odour of Death that had begun to pervade the surrounding air. There was a gentle head wind, and presently the faint “dead sea-weed” smell, which the boat’s crew had probably noticed, slightly wondering, perhaps, at its origin, became, first, “dead fish,” and then “decayed fish,” and finally “putrid fish” with increasing vehemence and speed. In about five minutes it had become almost beyond endurance. Still, following an immortal precedent, I lay low. Then from the aftermost thwarts of the boat there arose indignant sniffs of the loudest and longest nature. “Ph-ph-phew!” came from each of them, where the men sat at their half-finished dinner; and all turned forward towards the now obvious source of the stench—this horrid word alone describes what

the mantelpiece ornament had by then become. Then, in a hoarse whisper, not intended (or was it ?) for my ear, from the coxswain, sitting on the after-thwart, "'Ere, what th' 'ell 'a' ye got, forward there? Go on, 'eave it overboard at once. Ye'll poison th'ole bloody lot of us! Ph-ph-ph-phew!" And expostulations of an equal vigour went forward, thwart by thwart, in terms which, while the other parts of speech may have been varied, there was but one adjective. If not always strictly applicable, yet it appeared to express the general emotion. Then did the bowman, himself the heaviest sufferer, sitting, as he was, on the very source of the poison-gas, pull up his grating, gingerly lift out the now foul and dripping branch, and cast it into its watery birthplace, now to become its grave. Never again was there any attempt at collecting coral, no matter what its beauty or suitability for parlour ornamentation.

The need for a re-survey of the Inner Route off the Queensland coast was rendered distressingly evident by the loss of the passenger steamer *Quetta*, which took place while we actually were engaged on surveying the waters but a few miles southward of the place of the wreck in Adolphus Channel.

Judging by the chart of this Channel, there was no indication that shoal water would be encountered anywhere in the

vicinity. The *Quetta* was following what had hitherto been considered to be a safe deep-water route: one that had been used by thousands of vessels before her. No ship navigating a tidal channel keeps an exactly precise course, no matter what care is taken, and it was little short of a miracle that no previous ship had been taken just those few yards—it was no more—northward of the track recommended on the chart, where the depths were sixty feet and more. Had one done so, she would have been impaled, as was the unfortunate *Quetta*, on a rocky pinnacle, whose top, hidden only twelve feet below the surface, projected upwards from the sea bottom like a spike. The ship was going full speed, quite unconcernedly, at the time; so that when she struck, an enormous hole was ripped in her bottom plates. Filling rapidly, her momentum carried her some hundreds of yards farther along her track to the northward; and there she sank in eleven fathoms of water as if torpedoed. As for the passengers, most of them were drowned, but some got away in boats. There was no "wireless," and it was nearly two days before help arrived at that remote spot. A few more, including some women, were picked up, having drifted about, supported on wreckage, for more than forty hours. They were just alive; and were all in a state of the most utter exhaustion, having been foodless

and waterless ; defenceless from the blazing merciless sun above and from the equally merciless hungry sharks in the sea beneath. H.M.S. *Paluma* was engaged, with the *Dart*, in the re-survey of the Inner Route ; and we were both despatched at once from our regular work to search out and fix the position of the *Quetta* rock, so that the maritime world could, without delay, be warned and informed about it, and the newly discovered danger charted at once.

While the two ships were thus engaged, a small schooner came sailing in from the eastward. She was loaded with "shell"—that is to say, with the pearl-oyster shells of those waters, which are several times as large as those that inhabit the chilly beds of Colchester. "Shelling" is one of the chief businesses of the Queensland coast to the northward, and it is a valuable one, for from this shell "mother-o'-pearl" studs and buttons and such matters are made. There are several well-established shelling grounds off Cape York, the northernmost point of Queensland, but in the scarcely surveyed Coral Sea to the eastward and southward lie reefs and shoals that are also "shelling" grounds, some of which are shown on the charts and some not. The secret of these grounds is jealously guarded by the lucky discoverers. They are, of course, No Man's Land, or rather, No Man's Reefs. Beyond their

latitude and longitude, there is little to indicate their position. All that is to be seen, in most cases, is a green turbulence of the water when the tide is high, and at low tide, perhaps a few white mounds of sand resting on the crest of a foaming reefy ridge, with the sea-birds wheeling and screaming over them.

The reef usually surrounds and encloses a space of shallow water, as a fence surrounds a field. Within the fence the depths may be no more than from 20 to 30 feet ; but immediately outside it, below the top belt of living coral, the submerged slope falls sharply from 20 fathoms to 200 fathoms, and then, with amazing suddenness, to 2000 fathoms—the ocean's floor.

At the bottom of some, but not of all, of the reef-lagoons the pearl-oyster lies, and the schooner we had sighted and spoken had come in with a cargo from one of these ocean atolls, her own secret, and special preserve. She brought, at first hand, a strange tale of the sea.

Not long before, her skipper told us, he had been booming westward in another schooner, with a full hold and every stitch stretched. The South-East Trade wind, which was carrying him home, as occasionally happens, worked itself up into being a south-east gale, and before it the schooner flew still faster, with a following sea of roaring white-topped waves. There was some cause for

anxiety, but she was a good vessel, well steered. She was making splendid running on the direct homeward track, and with proper care at the helm, they knew they would pull through successfully, even though, owing to the cloud-covered sky that accompanies these wild bursts of the "Trade," they had not had sights for some days, and so only roughly knew their whereabouts in the Coral Sea. Suddenly they made out, a couple of miles ahead of them, green water piling up, and breaking in towering spouts of foam—the sure sign of the weather edge of a reef. The sight was truly alarming, for it was impossible to haul to the wind to clear the danger, and equally impossible to gybe to clear it on the other tack, as the wind was far too strong and the sea too high for any such manœuvre. All they could hope for was to discover a gap in the reef ahead of them through which, perchance, they might pass. Presently even this hope was snatched from them, for, as they flew towards it, and could see better, they realised that the foaming wall of reef in front of them stretched right across their track, from one extreme of visibility on their horizon to starboard over to the other extreme to port, and that there was not the smallest sign of a gap in its impregnable line.

There was nothing for it but to keep the flying schooner straight at it, in the forlorn

hope that some extra big wave might so time itself as to carry her over the barrier, clear of the coral ridge beneath. So they set their teeth, and held the schooner's head as directly as they were able towards a point, luckily nearly ahead of them, where the green water was not breaking in quite so towering a head of foam as elsewhere. Fortune favours the bold. As the little ship neared the reef, an enormous mound of water roared up behind her, lifted her on its white-streaked back, and carried her, body and bones, "over the top," and into the pale green shallows of the lagoon on the lee side, not, indeed, without shipping a good deal of water in transit, but at least safe, and unscratched as to the bottom timbers. The sails were quickly doused, the anchor let go, the cable veered as far as it would go with safety, and there was the schooner gallantly riding the tumbling seas coming at her from all points round the basin, yet chastened in character through their impact with the exterior wall of the reef, while the howling wind still steadily blew. Evening was falling, and, as often happens, the wind began to fall too. By morning the gale had blown itself out, and after a few wet squalls, the real South-East Trade, steady and moderate, resumed possession of its kingdom. The sea subsided simultaneously, and the schooner's crew manned their boat and set forth to explore the lagoon into which

they had so wonderfully been carried, in order to seek in the surrounding wall of reef for a gap to leeward by which they might escape, to continue their homeward voyage. None could be found. The reef-barrier, though nowhere showing above water, was quite continuous. There were a few slight depressions, but not any navigable passage in its whole circuit.

Their only chance of getting out lay in jettisoning the cargo of shell in the lagoon, so that the ship might be lightened sufficiently to permit her to float over the crest of the reef when the tide was at its highest point. The shell was sewn up in sacks accordingly, and lowered over the side to the bottom of the lagoon to a depth of about five fathoms alongside of the schooner as she lay at anchor, and the position of the cache was marked by a buoy, moored with a good buoy-rope and anchor. Then, having found the geographical position as accurately as they were able by sextant "sights" of sun and stars, they made sail once more, and, with their now reduced draught, managed to scrape over the reef-top to leeward at a moment of high water, and reached Queens-land in a few days' time.

On hearing their story, the owner of the schooner fitted out another schooner with a lighter draught belonging to his fleet, and sent her out, with an experienced diver on board,

to the reef where the shell lay on the lagoon bottom, in order to recover the precious cargo in as many trips as should be necessary. She reached the reef, crossed it without difficulty, found the mark-buoy still in position, anchored, and sent down the diver to begin operations.

Some minutes went by without any signal, and then the man reappeared at the surface, climbed the diving ladder, and made signs for the glass door on the front of his helmet to be unscrewed. He reported that the sacks of shell were there safely enough, but that they were lying on the top of a large mound, heaped up above the flat floor of the lagoon—a mound entirely composed, so far as he could see, of silver coins! And, so saying (this "Arabian Nights" style seems the only one appropriate to the occasion), he drew from the pocket of his diver's apron a small pile of dollars, all stuck together by coral concretion, but easily separable into individual coins! There were many thousands of dollars in that heap beneath the bags of pearl shell, and several journeys had to be made before all were retrieved. That the shell should thus have been jettisoned on top of a heap of forgotten treasure was a chance as slight as is the winning of a "hospital's" lottery. It was one in many millions. Consider it. The part of the Coral Sea where the pearl shell is found covers an area of, perhaps, 4000 square

miles. The reef lagoon of the treasure has the same relation in area to that of the Coral Sea as, say, Hyde Park has to the whole of England. The treasure heap itself had the same relation in area to that of the reef lagoon as, perhaps, the mound of the Achilles statue has to that of Hyde Park. Then imagine an aeroplane, storm-driven from the Continent, accidentally dropping a message exactly on Achilles' outstretched sword. To ask any one to believe the possibility of this equivalent chance shot by a storm-driven schooner in the Coral Sea seems to demand a credulity that the most Royal Marine-like hearer of tales of the sea could scarcely provide. The story is, however, perfectly true. I have myself handled a small pile of about ten of the dollars, easily recognisable as such, though glued together by coral into a solid lump. How did they get into that reef lagoon?

Their origin has never been certainly decided; but the following conjecture has been made. In the early days of the nineteenth century the currency used in the colony of Botany Bay—that by which the troops and prison warders and other Government officials were paid—was in "pillar" dollars of the same minting as those found in the reef lagoon. They were so named from the two pillars (of Hercules "plus ultra") which support the coat-of-arms of Spain on their obverse. There was a shortage of coinage in

England in those times of war (an experience that we, not so long ago, shared), so that it was found cheaper to import to New Holland supplies of silver coins from what was then the nearest civilised point—namely, the Spanish colony of the Philippine Islands.

Hence "pillar" dollars. They were then not "tokens," but represented their value in silver in the same way that a sovereign represents its value in gold. Old records of the Colony of Botany Bay show that several ships bringing supplies of this currency had been lost on the voyage without leaving any trace of how they came by their end; and thus it can fairly confidently be supposed that the heap of dollars found by the shelling schooner was all that remained of one of these unfortunates. We may imagine that she found herself suddenly up against the weather face of the unknown reef in the same manner as our schooner, and had been unable either to clear it or to leap the coral fence; but had been wrecked, and then cast by the enormous waves bodily over into the lagoon. Then she had broken up, leaving behind her the only solid part of her cargo, the dollars, locked up, no doubt, in the specie room, but now long since released from their wooden prison by sea-worms and teredoes. What of her crew?

The nearest inhabited land to the reef where the dollars

were found was an island at the entrance of the Torres Strait that divides Australia from Papua. Inquiries were made there among the oldest natives as to any memory of the survivors of such a catastrophe. One very old man was found who could recollect that when "me pickninny boy," a boat-load of white people, very hungry and thirsty, no doubt, had landed, coming in from the sea to the eastward. But the cheerful islanders were hungrier still. All of the visitors were clubbed instantly on landing, and "altogidder man b'long my placee kaikai plenty b'long him," which is "beach-la-mar" English for the description of the ensuing dinner-party.

January saw us on our way back to Sydney. The hydrographic surveyor's life, in whatever region of the earth he is at work, is necessarily divided into two parts—namely, Part I., The Field; and Part II., The Office. The first part, which is also the longest, occupies the time when he is out in the open taking soundings, and making the necessary observations on shore for triangulation, coast-line, tides, astronomical position, and so forth. The second part is the room on shore in which all the field-work (already plotted) is draughted, and brought together, neatly and concisely, into "The Fair Sheet."

In almost every part of the world, tropics or otherwise,

there is a good season for weather and a bad season, and the hydrographer arranges his work accordingly. By January the bad weather season of that part of Queensland was approaching, and we fled southward from it for our "lie-up time." As regards heat, it was the proverbial step from the frying-pan into the fire, for there can be very few hotter places than Sydney in midsummer. On the other hand, it possesses many compensating amenities, such as a comfortable harbour and a friendly buoy, to which a ship may be secured without any of those anxieties as to "dragging" so constant on the surveying ground, where often one has to anchor in quite unsheltered water. There was leave on shore for "all hands," and, as regards the Fair Sheet, instead of a pokey chart-room on board, there was for its draughting "The Office"—a comfortable spacious room on shore, with large tables, plenty of light, and escape from ship noises, and a thousand ship worries.

The time "in the field" was full of joys and interests, but even to the keenest surveyor there comes a moment when the blessings of the land (to be obtained by the fruits of his labours, as indicated daily in the ship prayers) seem to him immensely desirable.

So at Sydney we settled ourselves down for a happy four months of "lie-up"—men, officers, and the old ship herself,—

all much in need of a thorough supplementary sheets of har-
refit after many months of bours and anchorages occurring
battering about in all weathers. in the area—then there is

The draughting of a Fair given a tea-party at the Office,
Sheet is a work that almost to which are bidden all the
any one can learn to accomplish. best girls who have behaved
It is a mere exercise of careful- themselves sufficiently nicely
ness. No artistic qualifications during the "lie-up"; and they
are necessary, or almost none; are permitted to gaze, magnify-
they are even undesirable. The ing-glass in hand, at all this
Naked Truth, even if, artistic- exhibition of patience, neatness,
ally speaking, it is the ugly and carefulness.
truth, is what has to be set They have even been known
down. Imagination in chart- to admire the exhibitors of
making is not to be encouraged, these virtues thus displayed;
for Imagination, like Beauty, and if the admiration has occa-
has before now been known to sionally become mutual and
"wreck a thousand ships," and has wandered into Romance
thus defeat the very object of . . . but I digress. All the
the chart. same, the numbers of Aus-
tralian wives in the Hydro-

A finished Fair Sheet is graphic Department that were
quite an interesting sight, with collected while our ships were
the land and the reefs and the at work in those waters show
shoals each painted in its ap- that the dangers of the sur-
propriate tint, with all the veyor's life do not end with the
little figures which represent surveying ground, but follow
soundings in their imposing him into the very "Office."
battalions of thousands set
down in line upon line, and
with the decorative "heading,"
or title of the chart, done in
more or less fancy types of
printing.

When it is completed—not
only the main Fair Sheet of the
whole survey, but also the

One does not want to dis-
courage young officers from
becoming hydrographers, but
they should be informed be-
forehand that there seems to
be no escape, afloat or ashore,
from risks of the most serious
character.